We claim:

1. A method for the determination of gas flow velocities irrespective of the nature of the gas or the flow velocity thereof, which comprises positioning a flow sensing device in a gas flow, said flow sensing device comprising of at least one electrically conducting solid material positioned at an angle to the gas flow, at least one conducting element connecting said at least one conducting material to a electricity measurement means, the gas flow over said at least one solid material generating a flow of electricity along the direction of the gas flow due to the pressure gradient developed across the solid material, said electrical energy being transmitted by said conducting element to said electricity measurement means provided external to the gas flow, to measure the electricity generated as a function of the rate of flow of said flow.
2. A method as claimed in claim 1 wherein the solid material comprises a material with a high Seebeck coefficient.
3. A method as claimed in claim 1 wherein the solid material is selected from the group consisting of a doped semiconductor, graphite, a single wall type carbon nanotube, a multi-wall type carbon nanotube, and metallic material with high Seebeck coefficient.
4. A method as claimed in claim 3 wherein the doped semiconducting material is selected from the group consisting of n – Germanium, p – Germanium, n – silicon and p – silicon.
5. A method as claimed in claim 3 wherein the metallic material is selected from polycrystalline copper, GaAs, Tellurium and Selenium.
6. A method as claimed in claim 1 wherein the gas is selected from the group consisting of nitrogen, argon, oxygen, carbon dioxide and air.
7. A method as claimed in claim 1 wherein the method has a response time of < 0.1s.

8. A method as claimed in claim 1 wherein a voltage is induced in the solid material due to the flow of the gas depends on a temperature difference across the solid material along the direction of inviscid flow.

9. A method as claimed in claim 1 wherein the gas flow has a velocity in the range of 1 to 140 m/s.

10. A method as claimed in claim 1 wherein the gas flow across the solid material is at an angle in the range of 20° and 70°, preferably of 45°.

11. A flow sensing device useful for measurement of gas flow velocities irrespective of the flow velocity or the nature of the gas, said device comprising at least one gas flow sensing element and at least a conducting element connecting said gas flow sensing element to a electricity measurement means.

12. A flow sensing device as claimed in claim 11 wherein the gas flow sensing element comprises a solid material with good electrical conductivity and high Seebeck coefficient.

13. A flow sensing device as claimed in claim 12 wherein the solid material is selected from the group consisting of doped semiconductor, graphite, single wall type carbon nanotube, multi-wall type carbon nanotube, and metallic material with high Seebeck coefficient.

14. A flow sensing device as claimed in claim 13 wherein the doped semiconducting material is selected from the group consisting of $n-$ Germanium, $p-$ Germanium, $n-$ silicon and $p-$ silicon.

15. A flow sensing device as claimed in claim 13 wherein the metallic material is selected from polycrystalline copper, GaAs, Tellurium and Selenium.

16. A flow sensing device as claimed in claim 11 wherein the gas is selected from the group consisting of nitrogen, argon, oxygen, carbon dioxide and air.

17. A flow sensing device as claimed in claim 11 wherein the electricity measurement means comprises a ammeter to measure the current generated across the opposite ends of said at least one or more gas flow sensor elements or a voltmeter to measure the potential difference across the two opposite ends of the said one or more gas flow sensor elements.

18. A flow sensing device as claimed in claim 11 wherein the flow sensing element comprises of a plurality of doped semiconductors all connected in series or parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of doped semiconductors.

19. A flow sensing device as claimed in claim 18 wherein the said plurality of doped semiconductors are connected in series so as to measure the potential difference generated across the ends of the said plurality of doped semiconductors.

20. A flow sensing device as claimed in claim 18 wherein the said plurality of doped semiconductors are connected in parallel to each other so as to enable determination of the current generated across the two ohmic contacts formed by the respective conducting elements at the ends thereof.

21. A flow sensing device as claimed in claim 11 wherein the gas flow sensor comprises of a matrix consisting of a plurality of gas flow sensing elements consisting of solid materials connected by metal wires, the entire matrix being provided on a high resistance undoped semiconducting base, said matrix of sensing materials being connected to a electricity measurement means.

22. A flow sensing device as claimed in claim 11 wherein the electricity measurement means is selected from a voltmeter and an ammeter.

23. A flow sensing device as claimed in claim 21 wherein the gas flow sensing elements forming the matrix and the metal wires connecting said gas flow sensing elements are provided on a single chip.

24. A flow sensing device as claimed in claim 11 wherein the gas flow sensor comprises of alternate strips of n and p type semiconductors, each n and p type semiconductor strip being separated from its immediate neighbor by a thin intervening layer of undoped semiconductor, said alternate strips of n and p type semiconductors being connected by a conducting strip, said alternate strips of n and p type semiconductors with intervening undoped semiconductor layers, and conducting strip being provided on a semiconducting base material, electrical contacts being provided at two opposite ends of the base material and connected to a electricity measurement means.

25. A flow sensing device as claimed in claim 11 wherein the one or more gas flow sensor elements comprises of a plurality of carbon nanotubes all connected in series or parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of carbon nanotubes.

26. A flow sensing device as claimed in claim 25 wherein the said plurality of carbon nanotubes are connected in series so as to measure the sum of the potential difference generated across the ends of the said plurality of carbon nanotubes.

27. A flow sensing device as claimed in claim 25 wherein the said plurality of nanotubes are connected in parallel to each other so as to enhance of the current generated across the two ohmic contacts formed by the respective conducting elements at the ends thereof.

28. A flow sensing device as claimed in claim 11 wherein the one or more gas flow sensor elements are provided on a insulated base.

29. A flow sensing device as claimed in claim 11 wherein the conducting element comprises of a wire.

30. A flow sensing device as claimed in claim 11 wherein the conducting element comprises of an electrode.

31. A flow sensing device as claimed in claim 11 wherein the conducting element comprises of a combination of a wire connected to an electrode.

32. A method for the generation of electrical energy using an energy conversion device comprising at least one energy conversion means, at least a conducting element connecting said energy conversion means to a electricity storage or usage means, the flow of a gas across the energy conversion means resulting in generation of a Seebeck voltage being generated in each energy conversion means along the direction of the gas flow, thereby generating electrical energy, said electrical energy being transmitted to the energy storage or usage means through the said conducting elements.

33. A method as claimed in claim 32 wherein the energy conversion means comprises a solid material with good electrical conductivity and high Seebeck coefficient.

34. A method as claimed in claim 33 wherein the solid material is selected from the group consisting of a doped semiconductor, graphite, a single wall type carbon nanotube, a multi-wall type carbon nanotube, and metallic material with high Seebeck coefficient.

35. A method as claimed in claim 34 wherein the doped semiconducting material is selected from the group consisting of *n* – Germanium, *p* – Germanium, *n* – silicon and *p* – silicon.

36. A method as claimed in claim 34 wherein the metallic material is selected from polycrystalline copper, GaAs, Tellurium and Selenium.

37. A method as claimed in claim 32 wherein the gas is selected from the group consisting of nitrogen, oxygen, carbon dioxide, argon and air.

38. A method as claimed in claim 32 wherein the energy conversion device comprises of a plurality of doped semiconductors all connected in series or parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of doped semiconductors.

39. A method as claimed in claim 38 wherein the said plurality of doped semiconductors are connected in series.

40. A method as claimed in claim 38 wherein the said plurality of doped semiconductors are connected in parallel to each other so as to enable determination of the current generated across the two ohmic contacts formed by the respective conducting elements at the ends thereof.

41. A method as claimed in claim 32 wherein the energy conversion means comprises of a matrix consisting of a plurality of gas flow sensing elements consisting of solid materials connected by metal wires, the entire matrix being provided on a high resistance undoped semiconducting base, said semiconducting base being connected to a electricity storage means.

42. A method as claimed in claim 41 wherein the gas flow sensing elements forming the matrix and the metal wires connecting said gas flow sensing elements are provided on a single chip.

43. A method as claimed in claim 32 wherein the gas flow sensor comprises of alternate strips of n and p type semiconductors, each n and p type semiconductor strip being

separated from its immediate neighbor by an thin intervening layer of undoped semiconductor, said alternate strips of n and p type semiconductors being connected by a conducting strip, said alternate strips of n and p type semiconductors with intervening undoped semiconductor layers, and conducting strip being provided on a semiconducting base material, electrical contacts being provided at two opposite ends of the base material and connected to a electricity storage means.

44. A method as claimed in claim 32 wherein the energy conversion means comprises of a plurality of carbon nanotubes all connected in series or parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of carbon nanotubes.

45. A method as claimed in claim 44 wherein the plurality of carbon nanotubes are connected in series.

46. A method as claimed in claim 44 wherein the plurality of nanotubes are connected in parallel.

47. A method as claimed in claim 32 wherein the energy conversion means are provided on an insulated base.

48. A method as claimed in claim 32 wherein the conducting element comprises of a wire.

49. A method as claimed in claim 32 wherein the conducting element is an electrode.

50. A method as claimed in claim 32 wherein the conducting element comprises of a combination of a wire connected to an electrode.

51. A method as claimed in claim 32 wherein the energy storage means comprises of a battery or storage cell.

52. An energy conversion device comprising a energy generation means comprising one or more energy conversion means, each said one or more energy conversion means

comprising of at least one solid material with a high Seebeck coefficient, at least one conducting element connecting said at least one energy conversion means to a electricity storage or usage means to store/use the electricity generated in said one or more energy conversion means due to a gas flow across the energy conversion means.

53. An energy conversion device as claimed in claim 52 wherein the solid material is selected from the group consisting of doped semiconductor, graphite, single wall type carbon nanotube, multi-wall type carbon nanotube, and metallic material with high Seebeck coefficient.

54. An energy conversion device as claimed in claim 53 wherein the doped semiconducting material is selected from the group consisting of $n-$ Germanium, $p-$ Germanium, $n-$ silicon and $p-$ silicon.

55. An energy conversion device as claimed in claim 53 wherein the metallic material is selected from polycrystalline copper, GaAs, Tellurium and Selenium.

56. An energy conversion device as claimed in claim 52 wherein the gas is selected from the group consisting of nitrogen, oxygen, carbon dioxide, argon and air.

57. An energy conversion device as claimed in claim 52 wherein an electricity measurement means is provided connected to the one or more energy conversion means through the conducting element, comprising an ammeter to measure current generated across opposite ends of the at least one or more solid material or a voltmeter to measure potential difference across two opposite ends of the one or more solid material.

58. An energy conversion device as claimed in claim 52 wherein the energy conversion means comprises of a plurality of doped semiconductors all connected in series or

parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of doped semiconductors.

59. An energy conversion device as claimed in claim 58 wherein the plurality of doped semiconductors are connected in series so as to measure the potential difference generated across the ends of the said plurality of doped semiconductors.

60. An energy conversion device as claimed in claim 58 wherein the plurality of doped semiconductors are connected in parallel to each other so as to enable determination of the current generated across the two ohmic contacts formed by the respective conducting elements at the ends thereof.

61. An energy conversion device as claimed in claim 52 wherein the energy conversion device comprises of a matrix consisting of a plurality of energy conversion means consisting of solid materials connected by metal wires, the entire matrix being provided on a high resistance undoped semiconducting base, said semiconducting base being connected to a electricity storage means.

62. An energy conversion device as claimed in claim 62 wherein the energy conversion means forming the matrix and the metal wires connecting said energy conversion means are provided on a single chip.

63. An energy conversion device as claimed in claim 52 wherein the energy conversion means comprises of alternate strips of n and p type semiconductors, each n and p type semiconductor strip being separated from its immediate neighbor by an thin intervening layer of undoped semiconductor, said alternate strips of n and p type semiconductors being connected by a conducting strip, said alternate strips of n and p type semiconductors with intervening undoped semiconductor layers, and conducting strip being provided on a semiconducting base material, electrical contacts being

provided at two opposite ends of the base material and connected to a electricity storage means.

64. An energy conversion device as claimed in claim 52 wherein the energy conversion means comprises of a plurality of carbon nanotubes all connected in series or parallel with a single conducting element each being provided at the respective extreme ends of the said plurality of carbon nanotubes.

65. An energy conversion device as claimed in claim 64 wherein the plurality of carbon nanotubes are connected in series so as to measure the potential difference generated across the ends of the said plurality of carbon nanotubes.

66. An energy conversion device as claimed in claim 64 wherein the plurality of nanotubes are connected in parallel to each other so as to enable determination of the current generated across the two ohmic contacts formed by the respective conducting elements at the ends thereof.

67. An energy conversion device as claimed in claim 52 wherein the energy conversion device is provided on an insulated base.

68. An energy conversion device as claimed in claim 52 wherein the conducting element comprises a wire.

69. An energy conversion device as claimed in claim 52 wherein the conducting element comprises an electrode.

70. An energy conversion device as claimed in claim 52 wherein the conducting element comprises of a combination of a wire connected to an electrode.

71. An energy conversion device as claimed in claim 52 wherein the electricity storage means comprises a battery.